BRYAN WILDER

bwilder@g.harvard.edu

EDUCATION

Harvard University   *2019 - Present*
PhD Candidate, School of Engineering and Applied Sciences
Adviser: Milind Tambe

University of Southern California   *2015 - 2019*
PhD Candidate, Department of Computer Science
Adviser: Milind Tambe

University of Central Florida   *2011 - 2015*
B.S. Computer Science *(summa cum laude)* with Minor in Mathematics
Thesis: Sparsification of Social Networks Using Random Walks. Advised by Gita Sukthankar.
Outstanding Thesis Award for Science and Engineering.

EXPERIENCE

Microsoft Research, Redmond   *Summer 2019*
Research Intern
Mentors: Ece Kamar and Eric Horvitz

SELECTED AWARDS AND FELLOWSHIPS

2021 Siebel Scholar Award

2020 MD4SG Best Student Paper Award

2020 Nominated for AAMAS Best Paper Award

2019 Honorable mention for ICML Best Paper Award

2019 Best Paper Award, Workshop on Optimization and Learning in Multi-Agent Systems @ AAMAS

2019 Best Research Assistant, USC Viterbi School of Engineering

2018 Second place in INFORMS Doing Good with Good OR Competition

2018 Nominated for AAMAS Best Student Paper Award

2017 AAAI Best Video Award

2017 Nominated for AAMAS Best Paper Award

2016 National Science Foundation Graduate Research Fellowship

2015 University of Southern California Annenberg Fellowship

2011 University of Central Florida Provost Scholar

JOURNAL PUBLICATIONS

J8. **Bryan Wilder**, Marie Charpignon, Jackson A. Killian, Han-Ching Ou, Aditya Mate, Shahin Jabbari, Andrew Perrault, Angel Desai, Milind Tambe, and Maimuna S. Majumder. Modeling between-population variation in COVID-19 dynamics in Hubei, Lombardy, and New York City. *Proceedings of the National Academy of Sciences* 117.41 (2020): 25904-25910.

J7. Daniel B. Larremore, **Bryan Wilder**, Evan Lester, Soraya Shehata, James M. Burke, James A. Hay, Milind Tambe, Michael J. Mina, Roy Parker. Test sensitivity is secondary to frequency and turnaround time for COVID-19 surveillance. *Science Advances* (2020) : eabd5393

J6. **Bryan Wilder**, Sze-chuan Suen, Milind Tambe. Allocating outreach resources for disease control in a dynamic population with information spread. *IISE Transactions on Healthcare Systems Engineering* (2020): 1-14.

J5. Eric Rice, Robin Petering, Amanda Yoshioka-Maxwell, Jaih Craddock, Darlene Woo, Nicole Wilson, Laura Onasch-Vera, **Bryan Wilder**, Amulya Yadav, Milind Tambe. Piloting the Use of Artificial Intelligence to Enhance HIV Prevention Interventions for Youth Experiencing Homelessness. *Journal of the Society for Social Work and Research* 9.4 (2018): 551-573.

J4. Anne Kandler, **Bryan Wilder**, Laura Fortunato. Inferring individual-level processes from population-level patterns in cultural evolution. *Royal Society Open Science* 4.9 (2017): 170949.

J3. **Bryan Wilder** and Anne Kandler. Inference of Cultural Transmission Modes Based on Incomplete Information. *Human Biology* 87.3 (2015): 193-204.

J2. **Bryan Wilder** and Kenneth O. Stanley. Reconciling Explanations for the Evolution of Evolvability. *Adaptive Behavior* 23.3 (2015): 171-179.

J1. **Bryan Wilder** and Kenneth O. Stanley. Altruists Proliferate Even When at a Selective Disadvantage Within their Own Niche. *PLOS ONE* 10.6 (2015): e0128654.

RIGOROUSLY REVIEWED CONFERENCE PUBLICATIONS

C28. **Bryan Wilder**, Michael J. Mina, Milind Tambe. Tracking disease outbreaks from sparse data with Bayesian inference. *AAAI Conference on Artificial Intelligence (AAAI)*. 2021.

C27. **Bryan Wilder**, Laura Onasch-Vera, Graham Diguiseppi, Robin Petering Chyna Hill, Amulya Yadav, Eric Rice, Milind Tambe. Clinical trial of an AI-augmented intervention for HIV prevention in youth experiencing homelessness. *AAAI Conference on Artificial Intelligence (AAAI)*. 2021.

C26. Kai Wang, **Bryan Wilder**, Andrew Perrault, Milind Tambe. Automatically Learning Compact Quality-aware Surrogates for Optimization Problems. *Advances in Neural and Information Processing Systems (NeurIPS)*. 2020. **Selected for spotlight presentation**.

C25. **Bryan Wilder**, Eric Horvitz, Ece Kamar. Learning to Complement Humans. *International Joint Conference on Artificial Intelligence (IJCAI)*. 2020.

C24. Harshavardhan Kamarthi, Priyesh Vijayan, **Bryan Wilder**, Balaraman Ravindran, Milind Tambe. Influence maximization in unknown social networks: Learning policies for effective graph sampling. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*. 2020. **Nominated for best paper.**

C23. Aaron Ferber, **Bryan Wilder**, Bistra Dilkina, Milind Tambe. MIPaaL: Mixed Integer Program as a Layer. *AAAI Conference on Artificial Intelligence (AAAI)*. 2020.

C22. Andrew Perrault, **Bryan Wilder**, Eric Ewing, Aditya Mate, Bistra Dilkina, Milind Tambe. Decision-Focused Learning of Adversary Behavior in Security Games. *AAAI Conference on Artificial Intelligence (AAAI)*. 2020.

C21. **Bryan Wilder**, Eric Ewing, Bistra Dilkina, Milind Tambe. End to End Learning and Optimization on Graphs. *Advances in Neural and Information Processing Systems (NeurIPS)*. 2019.

C20. Aida Rahmattalabi, Phebe Vayanos, Anthony Fulginiti, Eric Rice, **Bryan Wilder**, Amulya Yadav, Milind Tambe. Exploring Algorithmic Fairness in Robust Graph Covering Problems. *Advances in Neural and Information Processing Systems (NeurIPS)*. 2019.

C19. Po-Wei Wang, Priya L. Donti, **Bryan Wilder**, Zico Kolter. SATNet: Bridging deep learning and logical reasoning using a differentiable satisfiability solver. *International Conference on Machine Learning (ICML).* 2019. **Honorable mention for best paper**.

C18. Alan Tsang*, **Bryan Wilder***, Eric Rice, Milind Tambe, Yair Zick. Group-Fairness in Influence Maximization. *International Joint Conference on Artificial Intelligence (IJCAI).* 2019.
*Equal contribution

C17. Jackson A. Killian, **Bryan Wilder**, Amit Sharma, Vinod Choudhary, Bistra Dilkina, Milind Tambe. Learning to Prescribe Interventions for Tuberculosis Patients using Digital Adherence Data. *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD).* 2019.

C16. Matthew Staib* **Bryan Wilder***, Stefanie Jegelka. Distributionally Robust Submodular Maximization. *International Conference on Artificial Intelligence and Statistics (AISTATS).* 2019.
*Equal contribution

C15. **Bryan Wilder**, Bistra Dilkina, Milind Tambe. Melding the Data-Decisions Pipeline: Decision-Focused Learning for Combinatorial Optimization. *AAAI Conference on Artificial Intelligence (AAAI).* 2019.

C14. **Bryan Wilder**, Yevgeniy Vorobeychik. Defending Elections Against Malicious Spread of Misinformation. *AAAI Conference on Artificial Intelligence (AAAI).* 2019.

C13. Mohammad Javad Azizi, Phebe Vayanos, **Bryan Wilder**, Eric Rice, Milind Tambe. Designing Fair, Efficient, and Interpretable Policies for Prioritizing Homeless Youth for Housing Resources. *International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR).* 2018. **Invited to Constraints journal fast track for outstanding papers.**

C12. **Bryan Wilder**, Laura Onasch-Vera, Juliana Hudson, Jose Luna, Nicole Wilson, Robin Petering, Darlene Woo, Milind Tambe, Eric Rice. End-to-End Influence Maximization in the Field. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS).* 2018. **Nominated for best student paper.**

C11. **Bryan Wilder**, Han Ching Ou, Kayla de la Haye, Milind Tambe. Optimizing network structure for preventative health. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS).* 2018.

C10. **Bryan Wilder**, Yevgeniy Vorobeychik. Controlling Elections through Social Influence. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS).* 2018.

C9. Lily Hu, **Bryan Wilder**, Amulya Yadav, Eric Rice, and Milind Tambe. Activating the "Breakfast Club": Modeling Influence Spread in Natural-World Social Networks. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS).* 2018.

C8. **Bryan Wilder**, Sze-Chuan Suen, and Milind Tambe. Preventing infectious disease in dynamic populations under uncertainty. *AAAI Conference on Artificial Intelligence (AAAI).* 2018.

C7. **Bryan Wilder**. Equilibrium computation and robust optimization in zero sum games with submodular structure. *AAAI Conference on Artificial Intelligence (AAAI).* 2018.

C6. **Bryan Wilder**. Risk-sensitive submodular optimization. *AAAI Conference on Artificial Intelligence (AAAI).* 2018.

C5. **Bryan Wilder**, Nicole Immorlica, Eric Rice, and Milind Tambe. Maximizing influence in an unknown social network. *AAAI Conference on Artificial Intelligence (AAAI).* 2018.

C4. **Bryan Wilder**, Amulya Yadav, Nicole Immorlica, Eric Rice and Milind Tambe. Uncharted but not Uninfluenced: Influence Maximization with an Uncertain Network. *International Conference*

on *Autonomous Agents and Multiagent Systems (AAMAS)*. 2017.

C3. Amulya Yadav, **Bryan Wilder**, Robin Petering, Eric Rice and Milind Tambe. Influence Maximization in the Field: The Arduous Journey from Emerging to Deployed Application. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*. 2017. **Nominated for best paper award.**

C2. Shahrzad Gholami, **Bryan Wilder**, Matthew Brown, Arunesh Sinha, Dana Thomas, Nicole Sintov, Milind Tambe. Divide to Defend: Collusive Security Games. *Conference on Decision and Game Theory for Security (GameSec)*. 2016.

C1. **Bryan Wilder** and Gita Sukthankar. Sparsification of Social Networks Using Random Walks. *International Conference on Social Computation (SocialCom)*. 2015

SELECTED COVERAGE IN POPULAR PRESS

Yahoo News. Rapid testing could 'drive the epidemic toward extinction'. November 24, 2020. Features interview with Dr. Fauci discussing our Science Advances paper.

The Atlantic. The Plan That Could Give Us Our Lives Back. August 14, 2020.

New York Times. It's Kitchen Sink Time: Fast, Less-Accurate Coronavirus Tests May Be Good Enough. August 6, 2020.

Time Magazine. America Needs to Radically Rethink Our COVID-19 Testing Approach. July 29, 2020.

Washington Post. Long delays in getting test results hobble coronavirus response. July 12, 2020.

The Hill. Test frequency more important than sensitivity for coronavirus surveillance: study. July 7, 2020.

Nature News. Test frequency matters more than test sensitivity for stopping outbreaks (COVID research updates). June 26, 2020.

VentureBeat. Microsoft chief scientist: Humans and AI work better together than alone. May 17, 2020.

INVITED TALKS

"AI for Population Health": Pennsylvania State University, AI for Social Impact Seminar.

"Modeling between-population variation in COVID-19 dynamics in Hubei, Lombardy, and New York City": Boston Children's Hospital.

"Optimally targeting social network interventions under uncertainty": MIT Institute for Data, Systems and Society.

"Data, Decisions, and Inclusive Social Impact":

- KDD 2019 Data Science in India event
- Indian Institute of Science, Bangalore
- IIT Madras
- Singapore Management University, School of Information Systems Research Seminar
- National University of Singapore
- Kyushu University, Multi-Agent Laboratory Seminar

"Algorithmic Social Intervention":

- Washington University, St. Louis

- Microsoft Research, Redmond

VIDEOS

Amulya Yadav, Eric Rice, Robin Petering, Jaih Craddock, **Bryan Wilder**, Milind Tambe. HEALER: Using AI to Raise HIV Awareness among Homeless Youth. *AAAI Conference on Artificial Intelligence (AAAI)*. 2017. **Best video award.**

GRANT PROPOSALS ASSISTED WITH

G3. S&CC: Landslide Risk Management in Remote Communities: Integrating Geoscience, Data Science, and Social Science in Local Context. 9/1/2019-8/31/2022, approx. $2,100,974; NSF Smart & Connected Cities.

G2. Playing Security Games With No Time for Mapping Full Networks: Maximizing Influence in Uncharted Social Networks, 2/1/2017-9/1/2017, approx. $500,000; Army Research Office.

G1 Spatio-Temporal Game Theory and Real-Time Machine Learning for Adversarial Groups in the Wild, 01/01/2017-12/31/2019, approx. $1,250,000; Office of the Secretary of Defense MINERVA Research Initiative.

PROFESSIONAL SERVICE

Organizing Committee: 2020, 2019 IJCAI Workshop on AI for Social Good; AAAI 2017 Spring Symposium on AI for Social Good (AISOC).

Lead Organizer: Mechanism Design for Social Good (MD4SG) Working Groups program, Fall 2019-Present

Tutorial presenter: AAAI 2020 & AAMAS 2019 ("Optimization & Learning Approaches to Resource Allocation for Social Good"), Computational Sustainability Doctoral Consortium 2019 ("Submodular Optimization"), IJCAI 2018 ("Algorithmic Social Intervention"), AAMAS 2018 ("AI for Social Good").

Program Committee: AAAI 2021, ICLR 2021, SDM 2021, NeurIPS 2020, AAAI 2020, AAAI 2019, NeurIPS 2018.

Reviewer: AAMAS 2018, AAAI 2018, IJCAI 2017, 2016, GameSec 2016, NeurIPS 2016, Journal of Artificial Intelligence Research, Artificial Intelligence, IEEE Transactions on Signal Processing on Networks, Philosophical Transactions of the Royal Society B, ACM Transactions on Data Science, IEEE Transactions on Big Data, Autonomous Agents and Multi-Agent Systems, PLOS ONE.

STUDENTS MENTORED

Jason Huang (A.B. student, Harvard). Summer 2020-Present. Project: differentiable algorithms for stochastic matching (senior thesis).

April Chen (A.B. student, Harvard). Summer 2020-Present. Project: agent-based modeling for COVID-19.

Kavya Kopparapu (A.B. student, Harvard). Fall 2019-Present. Project: differentiable algorithms for graph optimization problems.

Hyeon-Jae Seo, Cameron Cohen, Isaac Sebenius (A.B. students, Harvard). Fall 2019. Project: Generalization of Real-Time Risk Prediction for Tuberculosis Treatment (class project).

Noah Foreman (B.S. student, USC). Summer 2017. Project: simulating models of influence diffusion on social networks and examining impact of model misspecification on influence maximization algorithms.

TEACHING EXPERIENCE

Graduate Teaching Assistant University of Southern California. *Spring 2018*
CSCI 170: Discrete Methods in Computer Science.

Graduate Teaching Assistant, University of Southern California. *Summer 2017*
CSCI 104: Object Oriented Programming and Data Structures

Guest Lectures, University of Southern California.
ENGR 102 Engineering Freshman Academy *Spring 2018*
CSI 499 AI for Social Good *Spring 2019*

Guest Lectures, Harvard University.
CS 108 Intelligent Systems: Design and Ethical Challenges *Spring 2020*
CS 182 Artificial Intelligence *Fall 2020*

Guest Lecture, University of Alberta.
CMPUT 656 Interactive Machine Learning *Fall 2020*

Guest Lecture, Carnegie Mellon University.
11-865/11-665: Tracking Political Sentiments Using Machine Learning *Fall 2020*